

# P2-100Y

**A Pentium® II or Deschutes  
Slot1 Processor based AGP  
mainboard (100/66MHz)**

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*These specifications are subject to change without notice.*

*Manual Revision 1.4  
June 15, 1998*

## **P2-100Y**

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**The product name and revision number are both printed on the mainboard itself.**

### **Handling Procedures**

**Static electricity can severely damage your equipment.** Handle the P2-100Y and any other device in your system with care and avoid unnecessary contact with system components on the mainboard.

Always work on an antistatic surface to avoid possible damage to the motherboard from static discharge.

We assume no responsibility for any damage to the P2-100Y mainboard that results from failure to follow installation instructions or failure to observe safety precautions.



### **CAUTION**



The P2-100Y mainboard is subject to  
damage by static electricity. Always  
observe the handling procedures.

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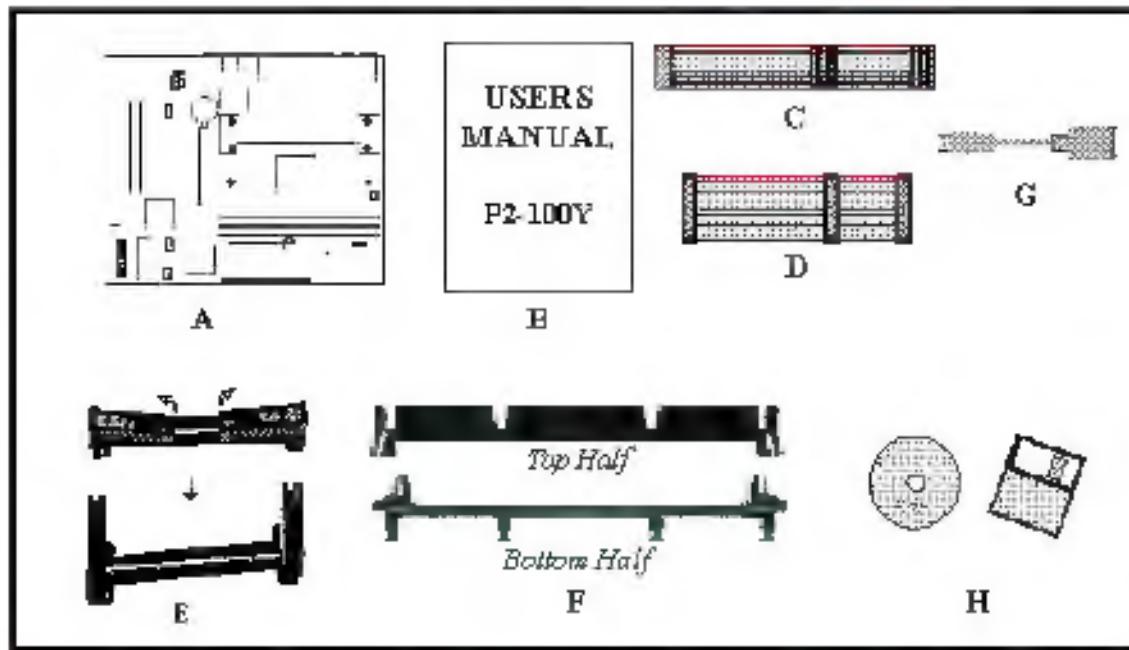
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**Section 1**  
**INTRODUCTION****Components Checklist**

- A. (1) P2-100Y mainboard
- B. (1) P2-100Y user's manual
- C. (1) Floppy ribbon cable
- D. (1) Hard drive ribbon cables
- E. (1) Foldable Retention Module
- F. (1) Heatsink Support Unit (Optional)
- G. (1) PS/2 to AT keyboard connector adapter (optional)
- H. (1) Bus master drivers  
      (1) USDM



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**Overview**

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**Pentium® II or Deschutes Processor**

The Pentium® II or Deschutes Processor (The Deschutes Processor at 300/100MHz, 350/100MHz, 400/100MHz and 450/100MHz speed with 512K-L2 cache Versions.) is the follow-on to the Pentium® Processor. The Pentium® II or Deschutes Processor, like the Pentium® Pro processor, implements a Dynamic Execution micro-architecture -- a unique combination of multiple branch prediction, data flow analysis, and speculative execution. This enables the Pentium® II Processor to deliver higher performance than the Pentium® processor, while maintaining binary compatibility with all previous Intel architecture processors.

A significant feature of the Pentium® II or Deschutes Processor, from a system perspective, is the built-in direct multiprocessing support. In order to achieve multiprocessing, and maintain the memory and I/O bandwidth to support it, new system designs are needed. For systems with dual processors, it is important to consider the additional power burdens and signal integrity issues of supporting multiple loads on a high speed bus. The Pentium® II or Deschutes Processor card supports both uni-processor and dual processor implementations.

The Pentium® II or Deschutes Processor utilizes Single Edge Contact (S.E.C.) (Figure 1) cartridge packaging technology. The S.E.C. cartridge allows the L2 cache to remain tightly coupled to the processor, while maintaining flexibility when implementing high performance processors into OEM systems. The second level cache is performance optimized and tested at the cartridge level. The S.E.C. cartridge utilizes surface mounted core components and a printed circuit board with an edge finger connection. The S.E.C. cartridge package introduced on the Pentium® II Processor will also be used in future Slot 1 processors.

The S.E.C. cartridge has the following features: a thermal plate, a cover and a PCB with an edge finger connection. The thermal plate allows standardized heatsink attachment or customized thermal solutions. The thermal plate enables a reusable heatsink to minimize fit issues for serviceability, upgradeability and replacement. The full enclosure also protects the surface mount components. The edge finger connection maintains socketability for system configuration. The edge finger connector is denoted as "Slot 1 connector" in this and other documentation.

The entire enclosed product is called the Pentium® II or Deschutes Processor. The

packaging technology and each of the physical elements of the product are referred to using accurate technical descriptions. This allows clear reference to the products as just a processor. This is the model used in past packaging technologies like PGA, TCP, PQFP, DIP, etc.

### **S.E.C. Cartridge Terminology**

- Pentium® II or Deschutes Processor  
The new enclosed card packaging technology is called a "Single Edge Contact cartridge." This is similar to previous names for packaging technology such as PGA or TCP.
- Processor card  
The green PCB (with or without components on it)
- Processor core  
The silicon on the PLGA package on the PCB
- Cover  
The plastic cover on the opposite side from the thermal plate
- Slot 1  
The slot that the S E C cartridge plugs into, just as the Pentium® Pro processor uses Socket 8
- Retention mechanism  
Formerly "retention module" the dual posts, etc. that holds the cartridge in place.
- Thermal plate  
The heatsink attachment plate.
- Heat sink supports  
The support pieces that are mounted on the mainboard to provide added support for heatsinks.

The L2 cache (TagRAM, PBSRAM) components keep standard industry names.

The Pentium® II or Deschutes Processor is the first product to utilize the S.E.C. cartridge technology and Slot 1 connector. Unless otherwise noted, any references to "Pentium® II Processor,"

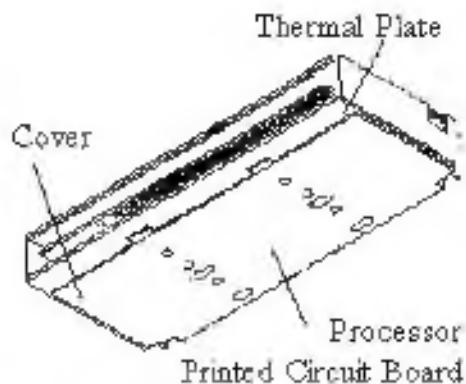


Figure 1: Pentium® II or Deschutes Processor CPU with S.E.C. Cartridge

"Pentium® II or Deschutes Processor/Slot 1 processor" or "Deschutes Processor" will apply to both the Pentium® II Processor desktop processors.

### **Accelerated Graphics Port (A.G.P or A.G.P.)**

Typically, 3D graphics rendering requires a tremendous amount of memory, and demands ever increasing throughput speed as well. As 3D products for the personal computer become more and more popular, these demands will only increase. This will cause a rise in costs for both end users and manufacturers. Lowering these costs as well as improving performance is the primary motivation behind AGP. By providing a massive increase in the bandwidth available between the video card and the processor, it will assist in relieving some of these pressures for quite sometime.

### **Hardware Monitoring**

Hardware monitoring allows you to monitor various aspects of your systems operations and status. These include features such as CPU temperature, voltage and fan RPM's.

## EP-61BXC-A Form-Factor

The EPoX EP-61BXC-A is designed with MicroATX form factor - the new industry standard of chassis. The MicroATX form factor is essentially a Baby-AT baseboard rotated 90 degrees within the chassis enclosure and a new mounting configuration for the power supply. With these changes the processor is relocated away from the expansion slots, allowing them all to hold full length add-in cards. MicroATX defines a double height aperture to the rear of the chassis which can be used to host a wide range of onboard I/O. Only the size and position of this aperture is defined, allowing PC manufacturers to add new I/O features (e.g.: TV input, TV output, joystick, modem, LAN, etc.) to systems. This will help systems integrators differentiate their products in the marketplace, and better meet your needs.

- Smaller size promotes a smaller system size
- I/O shield does not need to be retooled in an ATX 2.01 or later Mainboard could be used in an ATX 2.01-compliant
- A smaller power supply can be used. High integration on mainboard reduces the system costs.

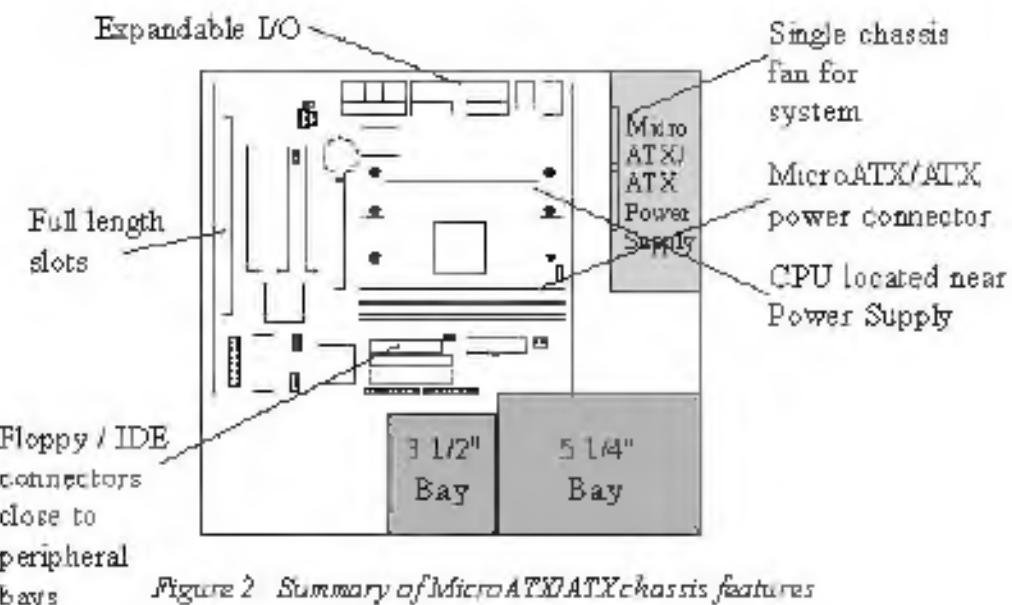


Figure 2 Summary of MicroATX/ATX chassis features

## I/O Shield Connector

The EP-61BXC-A is equipped with an I/O back panel. Please use the appropriate I/O shield (figure 3).

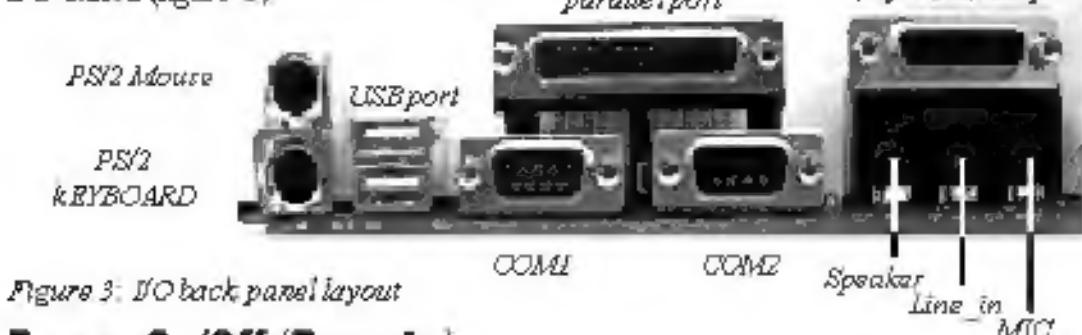


Figure 3: I/O back panel layout

## Power-On/Off (Remote)

The EP-61BXC-A has a single 20-pin connector for MicroATX power supplies. For MicroATX/ATX power supplies that support the **Remote On/Off** feature, this should be connected to the system's front panel for system Power On/Off button. The system's power On/Off button should be a momentary button that is normally open.

The EP-61BXC-A has been designed with "Soft Off" functions. You can turn OFF the system from one of two sources. The first is the front panel Power On/Off button, and the other is the "Soft Off" function (coming from the EP-61BXA-M's onboard circuit controller) that can be controlled by the operating system. Windows 95/98 will control this when the user clicks that they are ready to Shutdown the system.

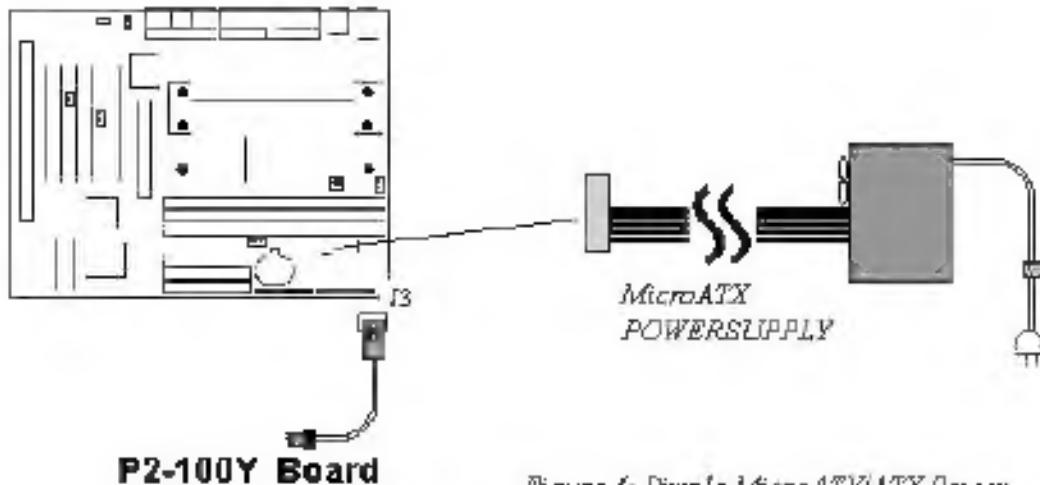


Figure 4: Simple MicroATX/ATX Power ON/OFF Controller

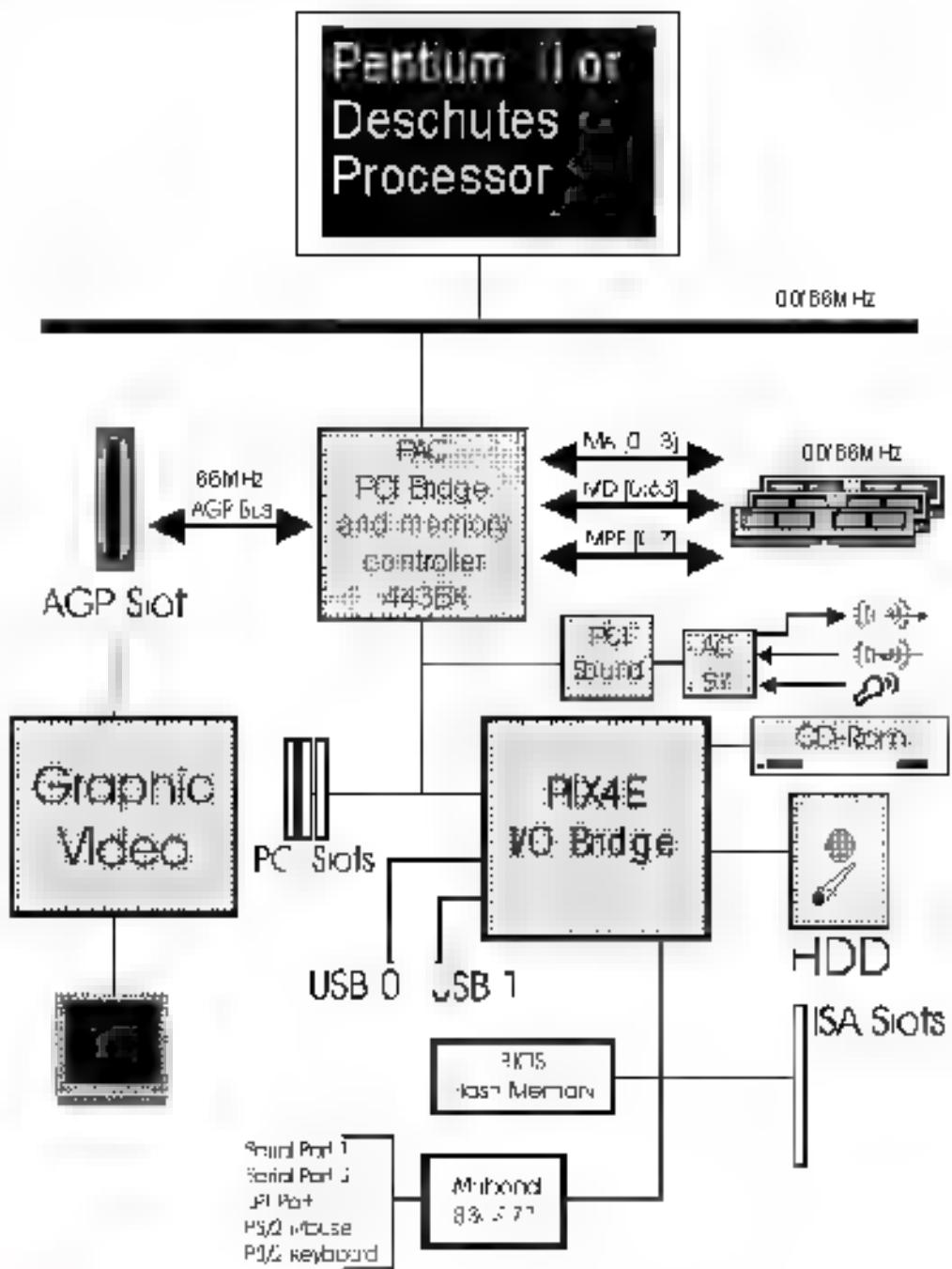
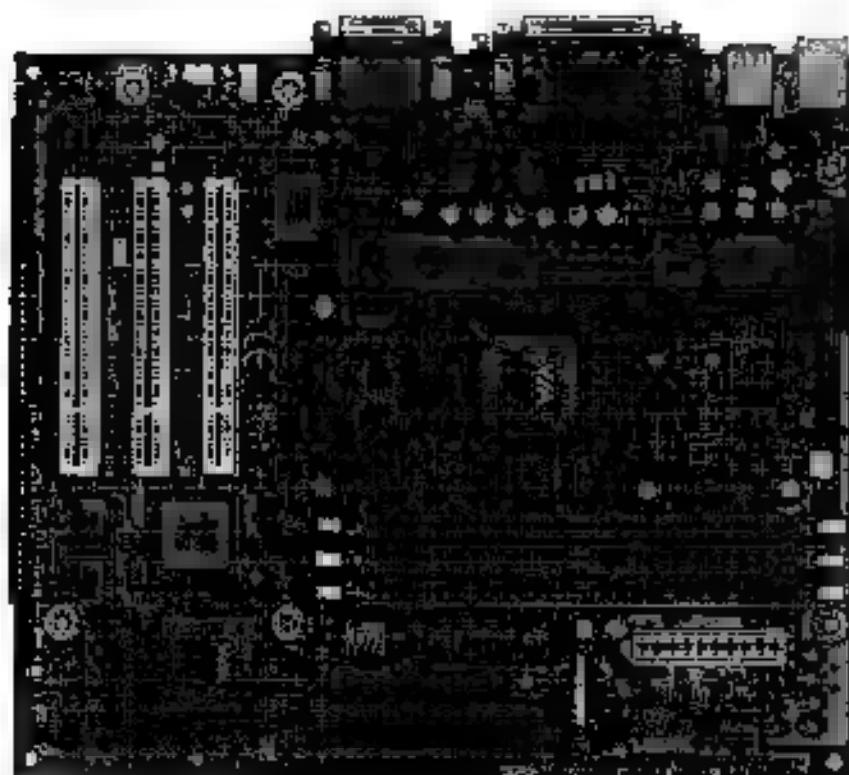
**System Block Diagram**

Figure 5 System Block Diagram

**Section 2  
FEATURES****P2-100Y Features:**

- P2 100Y is based on the Pentium® II or Deschutes Processor operating at 233 ~ 333MHz 66MHz or 300 ~ 550MHz 100MHz, on Slot 1. The board is configured by an DIP Switch to match your CPU clock speed
- Designed with VIA APOLLO PRO AGPset
- Supports up to 384 Mega of DRAM minimum of 16 MB on board. You can use 168-pin DIMM x 3. It will automatically detect Extended Data Output (EDO DRAM at 66MHz only) or Synchronous DRAM memory (SDRAM at 66MHz or 100MHz (please see Section 3-2))
- P2 100Y will support Error Checking and Correcting (ECC) when using parity DRAM memory modules. This will detect multiple bit errors and correct 1-bit memory errors
- Supports 1 16-bit ISA slots & 32-bit PCI slots. AGP slot and provides 2 independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 33 devices. The P2 100Y supports 2 PCI Bus Master slots and a unique PCI INT# control scheme which reduces configuration confusion when plugging in PCI cards
- Supports AIAPI (e.g. CD ROM) devices on both Primary and Secondary IDE interfaces
- Designed with Winbond W83B77TE Multi I/O. Floppy port, 1 parallel port (EPP/ECP) and 2 serial ports (16550 Fast UART). Note: Japanese "Floppy 3 mode" is also supported
- Includes a PS/2 mouse connector
- Allows use of a PS/2 keyboard
- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released (<http://www.epoch.com> please visit our Technical Support section for the latest updates)

**Section 3**  
**INSTALLATION**



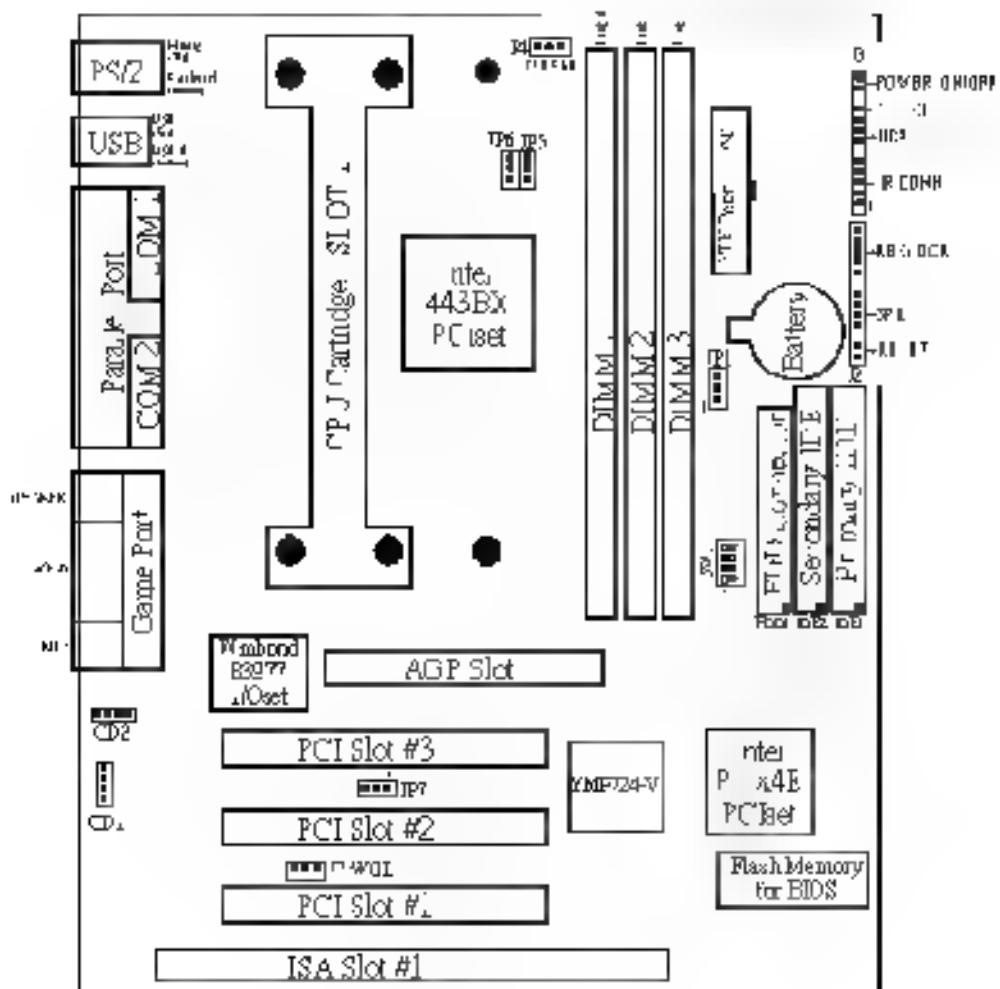
P2-100Y Detailed Layout

Figure 6

## Easy Installation Procedure

### Easy Installation Procedure

The following must be completed before powering on your new system

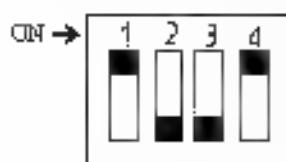
- 3 1. Configure DIP Switch to match your hardware
- 3 2. Instal. memory chips
- 3 3. Instal. Pentium II or Deschutes Processor
- 3 4. Device Connectors

### **Section 3-1** **Configure DIP Switch**

P2-100A designs all mainboards with a DIP Switch to make your instal fast and easy

The following will describe all of the DIP Switch that you are required to set before moving on to step 3 2

*Note: The DIP Switch as depicted as shown (Figure 6) in their correct physical orientation*



S.W.				CPI
1	2	3	4	66MHz busien
ON	ON	ON	ON	200 300
ON		ON	ON	233 330
	ON	ON	ON	266 400
ON		ON	ON	300 450
	ON	ON	ON	333 500

JP1

**CMOS Clear**

JP1 = 1 2 Normal (Default)  
= 2 3 Clear CMOS (momentarily)

JP5

**CPU BUS CLOCK**

JP5 = 1 2 AUTO (Default)  
= 2 3 100MHz

JP7

**Onboard PCI Sound**

JP7 = 1 2 Enabled  
= 2 3 Disabled

J7



**WOL (Wake up On Lan) Connector**  
Reserved for NIC (Network Interface Card) to Wake the System

## Section 3-2

### System Memory Configuration

#### Memory Layout

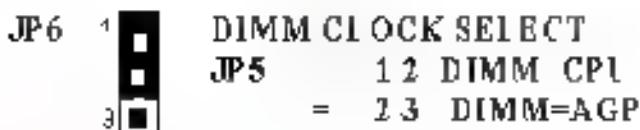
The P2-100Y supports (3) 168-pin DIMMs Dual In-line Memory Module. The DIMMs can be either EDO (Extended Data Out) or SDRAM (Synchronized DRAM). The DIMMs may be installed using just one chip.

- We recommend using SDRAM DIMM can not mixing with EDO DIMM modules together at 66MHz.
- The EDO DIMM only support pentium® II Processor at 66MHz not support Deschutes Processor at 100MHz.
- 256MB only Support registered synchronous DRAM Memory Modules. The Registered SDRAM DIMM do not mix with SDRAM DIMM modules together.
- We recommend when installed the 100MHz Deschutes Processor using DIMM SDRAM must be .25MHz Bus bus speed. If used 100MHz 10ns SDRAM may be critical tuning for the motherboard.
- About the "PC 100 SDRAM spec" information you may visit Intel's home page at <http://dev.eeze.intel.com/des/gn/pcsets/memory/index.htm>
- DIMM SDRAM may be 83MHz .2ns 100MHz 10ns or 25MHz Bus bus speed.

Figure 2 and Table 1 show several possible memory configurations using

DIMM 1 M1	Bank 0	Synchronous
DIMM 2 M2	Bank 1	SDRAM or EDO
DIMM 3 M3	Bank 2	DIMM

Figure 2



		DIMM 1	DIMM 2	DIMM 3
		DATA BUS	DATA BUS	DATA BUS
BUS 5 Number	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x	
BUS 9 Number	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x		No
BUS 8 Number	EDO SDRAM 3MB 6MB 12MB 64MB 73MB 128MB x	No		No

Table 1

\*SDRAM only supports 8, 16, 32, 64, & 8MB DIMM modules 256MB only supports Registered Synchronous DRAM Memory Modules

\* EDO only supports Pentium® II Processor at 66MHz not supports Deschutes Processor at 200MHz

## DIMM Module Installation

Figure 7 displays the notch marks and what they should look like on your DIMM memory module.

DIMMs have 68 pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 8) until it fits tightly into the DIMM socket (figure 9).



Figure 7



Figure 8

DIMM Module clip before installation

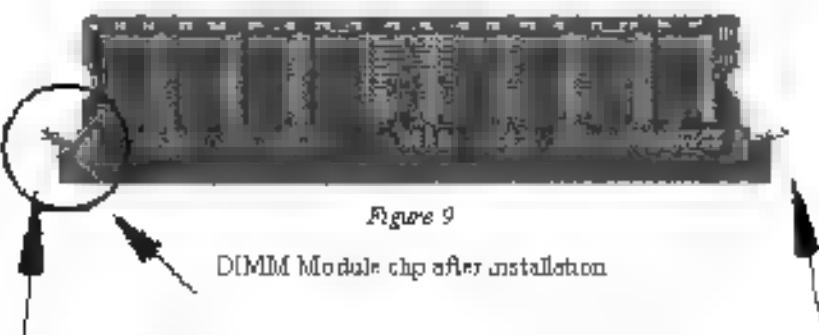


Figure 9

DIMM Module clip after installation

To remove the DIMM module simply press down both of the white clips on either side and the module will be released from the socket

### Section 3-3 Installing a Pentium II or Deschutes Processor

The P2 100Y uses the Single Edge Contact (SEC) slot for a Pentium II processor packaged in an SEC cartridge. The SEC slot is not compatible with other non-Pentium II processors.

Please have ready the following list of components so that we may install the processor onto the motherboard.

- 1 Heat sink support top/bottom piece
- 2 Pentium II processor heat sink
- 3 Intel Pentium II Processor

OK now that you have all of your components ready we can start

- ① First please refer to figure 0 below and follow the direction to lift up the fixed foldable pentium® II Retention Mechanism. This pre installed device is designed for you to instal Pentium® II CPU more easier and to avoide any damage on the board due to overtightening the four screws.
- ② One thing must be kept in your mind that please make sure to lift upright the foldable parts of the Retention module to fit and install CPU properly

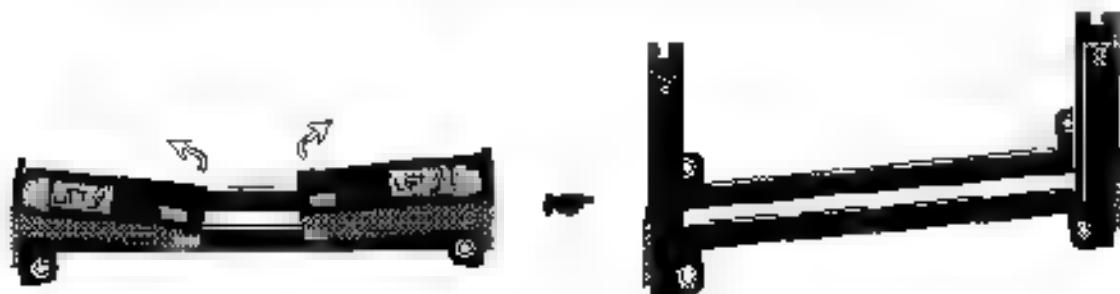


Figure 0

Now we are going to install the heatsink support base piece (figure 1, onto the motherboard. There is both a large and small hole (figure 2) so that the base will only fit in one direction. This piece needs to be pushed into the holes firmly until it is seated.

Now we are ready to install the SEC Cartridge ,Pentium II Processor, into the Retention Module. The SEC Cartridge is mounted by sliding the SEC Cartridge into the Retention Module and letting it slide all the way down. Once it reaches the

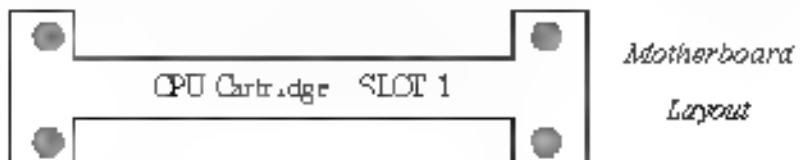
bottom make sure you press firmly on SEC cartridge to firmly secure into the Slot 1 Socket.

Now we need to secure the heatsink with the top half of the support (figure 13). Take the top piece of the support and slide it into the bottom fin (figure 13) on the heatsink and then push forward until it clips into the bottom base (figure 14) that is already there (figure 13).



Figure 11

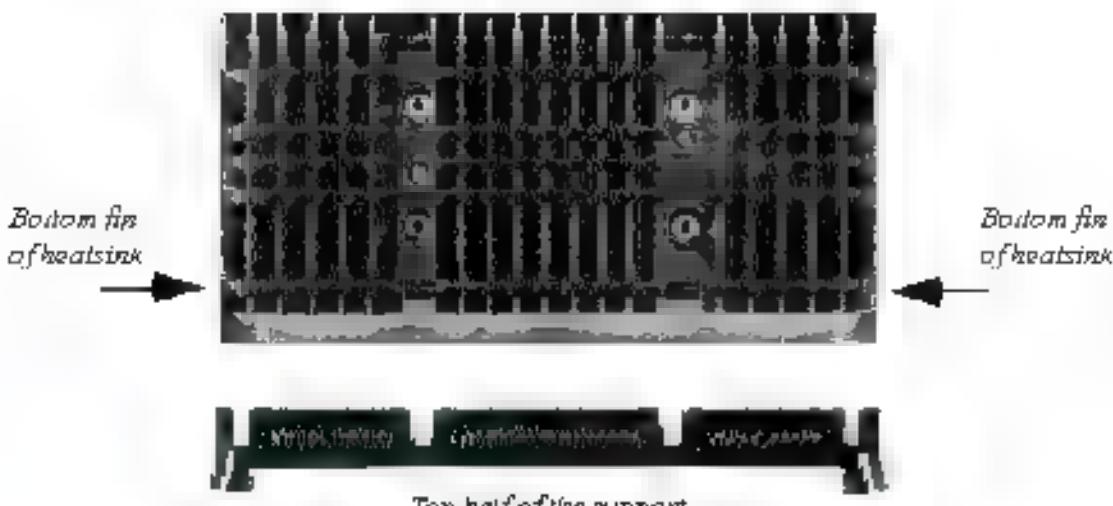
Figure 12 shows the layout of Slot 1 and the holes for mounting the Heatsink base piece.



Large Hole for Heat Sink Base

Small Hole for Heat Sink Base

Figure 12



Bottom fin of heatsink

Bottom fin of heatsink



Top half of the support

Figure 13

## Section 3-4 Device Connectors

Please install the mainboard into the chassis

Now that your mainboard is installed you are ready to connect all your connections (figure 4)

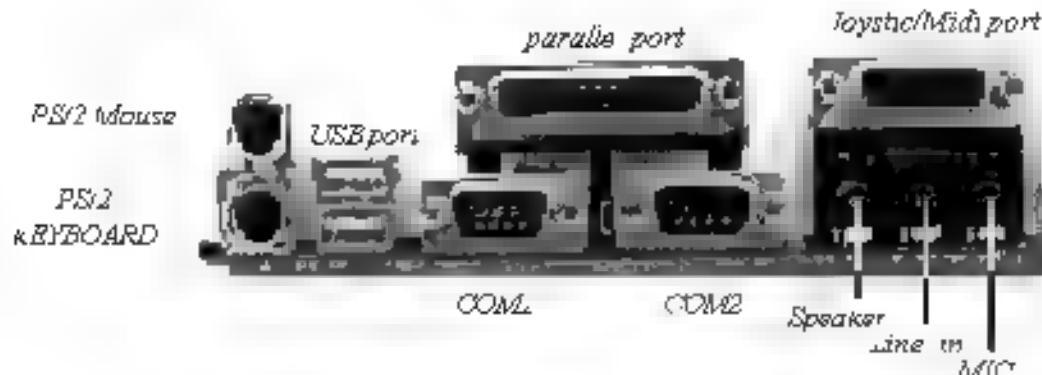


Figure 4

- J4** CPU Fan Power
  - A plug-in for the CPU Fan Power
- J2,J3** Chassis Panel Connector
  - Keylock Speaker Reset Sleep Turbo LED and HDD LED
- J7** WOL (Wake on Lan) Connector
  - 20 pin power connector
- PW2** ATX Power Connector
  - 20 pin power connector
- IDE1** Primary IDE Connector
- IDE2** Secondary IDE Connector
- FDD1** Floppy Controller Connector
- CD1**
- CD2**

## Section 4

### AWARD BIOS SETUP

#### **BIOS Instructions**

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery backed CMOS so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

#### **To enter the Setup Program**

Power on the computer and press the **<Delete>** key immediately, this will bring you into the BIOS CMOS SETUP UTILITY.

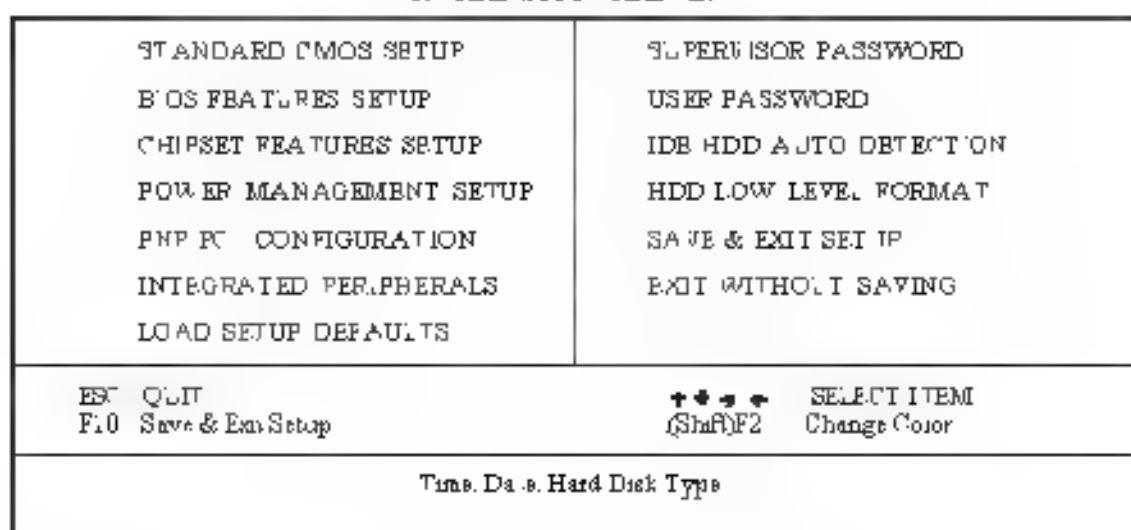


Figure 1 CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor, press any direction key to the item and pressing the Enter key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

#### 4-1 Standard CMOS Setup

Choose "Standard CMOS Setup" in the CMOS SETUP UTILITY Menu (Figure 2). The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive, installed floppy drive type and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted, use direction keys to move the cursor and the <Enter> key to select; the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

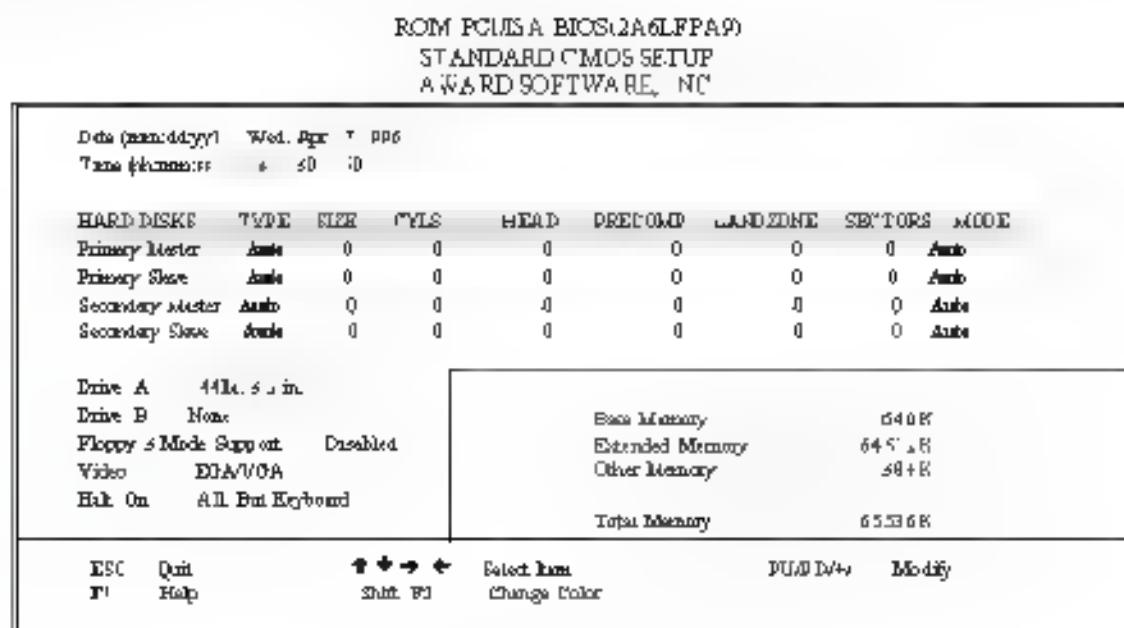


Figure 2: Standard CMOS Setup

**NOTE:** If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

*NOTE: The "Halt On" field is used to determine when to halt the system by the BIOS if an error occurs.*

*NOTE Floppy 3 Mode support is a mode used to support a special 3.5" drive used in Japan. This is a 3.5" disk that stores only 1.2 MB, the default setting for this is disabled.*

## 4-2 BIOS Features Setup

Selecting the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values for the P2-100Y.

Pressing the F1 key will display a help message for the selected item.

ROM PCISA BIOS(2MBFPA9)			
BIOS FEATURES SETUP			
AWARD SOFTWARE INC			
Virus Warning	Disabled	Video BIOS	Shadow
CPU Internal Cache	Enabled	C000-CFFF	Shadow
Dynamic Cache	Enabled	C000-CFFF	Shadow
CPU L2 Cache ECC Checking	Enabled	D000-DFFF	Shadow
Quick Power On Self Test	Enabled	D4000-DFFF	Shadow
Boot Sequence	A,C,B,C,S,I	D8000-DBFFF	Shadow
Beep Floppy Drive	Disable	DC000-DEFFF	Shadow
Boot By Floppy Seek	Enabled		
Boot By NumLock State	On		
Wait A20 option	Fast		
Memory Parity/ECC Check	Enabled		
Typeahead Rate Setting	Enabled		
Typeahead Rate (Char/Sec)	6		
Typeahead Delay (Max.)	300		
Security Option	Setup		
PC/LVGA Write-Through	Disabled		
DS Select For DRAM > 64MB	Non-DS		
Report NU FDD For Win 95	HD		
F1: Quit      F2: Help      F3: Old Values      F4: Load Setup Defaults      F5: Select Item F6: Undo/Do +      F7: Modify      (Shift) F2: Color			

Figure 2 BIOS Features Setup

**Virus Warning:** During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive. The default value is Disabled.

**Enabled.** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector

**Disabled.** No warning message will appear when anything attempts to access the boot sector

**Note** Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning

**CPU Internal Cache** This controls the status of the processor's internal cache area

The default is Enabled

**Enabled.** This activates the processor's internal cache thereby increasing performance.

**Disabled.** This deactivates the processor's internal cache thereby lowering performance.

**External (L2) Cache** This controls the status of the external (L2) cache area

The default is Enabled

**Enabled.** This activates the motherboard's L2 cache thereby increasing performance

**Disabled.** This deactivates the motherboard's L2 cache thereby lowering performance

**Quick Power On Self Test** This category speeds up the Power On Self Test (POST)

The default is Enabled

**Enabled.** This setting will shorten or skip of the items checked during POST

**Disabled.** Normal POST

**Boot Sequence** This category determines which drive is searched first by the O/S Operating System

The default is A,C,SCSI

The following is your list of options

[A C SCSI] [C A SCSI] [C CD-ROM A] [CD-ROM, C A]

[D A CD-ROM][B A, CD-ROM] [F A, CD-ROM] [SCSI A C]  
[SCSI C A] [C Only]

**Swap Floppy Drive** This will swap your physical drive letters A & B if you are using two floppy disks  
The default is Disabled

*Enabled*: Floppy A & B will be swapped under the O/S

*Disabled*: Floppy A & B will be not swapped.

**Boot Up Floppy Seek** During Power On Self Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. Only 360K type has 40 tracks while 720K, 1.2MB and 1.44MB are all 80 tracks  
The default is Enabled

*Enabled*: The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks

*Disabled*: The BIOS will not search for the type of floppy disk drive by track number.

**NOTE:** BIOS can not tell the difference between 720K, 1.2MB and 1.44MB drive types as they are all 80 tracks.

**Boot Up NumLock Status** This controls the state of the NumLock key when the system boots  
The default is On

*On*: The keypad acts as a numeric key pad.

*Off*: The keypad acts like the cursor keys

**Gate A20 Option** This refers to the way the system addresses memory above 1MB (extended memory)

The default is Fast

*Normal*: The A20 signal is controlled by the keyboard controller or chipset hardware

*Fast*: The A20 signal is controlled by Port 92 or chipset specific method.

**TypeMatic Rate Setting** This determines the keystrokes repeat rate

The default is Disabled

*Enabled*: Allows typeMatic rate and typeMatic delay programming

*Disabled*: The typeMatic rate and typeMatic delay will be controlled by the keyboard controller in your system

**TypeMatic Rate (Chars/Sec)** This is the number of characters that will be repeated by a keyboard press.

The default is 6.

- 6**. 6 characters per second.
- 8**. 8 characters per second.
- 10**. 10 characters per second.
- 12**. 12 characters per second.
- 15**. 15 characters per second.
- 20**. 20 characters per second.
- 24**. 24 characters per second.
- 30**. 30 characters per second.

**TypeMatic Delay (msec)** This setting controls the time between the first and the second character displayed by typeMatic auto-repeat.

The default is 250.

- 250**. 250 msec.
- 500**. 500 msec.
- 750**. 750 msec.
- 1000**. 1,000 msec.

**Security Option** This category allows you to limit access to the System and Setup or just to Setup.

The default is Setup.

**System**. The system will not boot and the access to Setup will be denied if the correct password is not entered at the prompt.

**Setup**. The system will boot, but the access to Setup will be denied if the incorrect password is not entered at the prompt.

**PCI/VGA Palette Snoop** This field controls the ability of a primary PCI VGA controller to share a common palette. (When a snoop write cycles with an ISA video card)

The default is Disabled.

**Enabled**. If an ISA card is connected to a PCI VGA card via the VESA connector and that ISA card connects to a VGA monitor then that ISA card uses the RAMDAC of the PCI card.

**Disabled**. Disables the VGA card Palette Snoop function.

**OS Select For DRAM > 64MB** Some operating systems require specific handling. Use this option only if your system has greater than 64MB of memory.

The default is Non-OS2.

**OS2**. Select this if you are running the OS2 operating system with greater than 64MB of RAM.

**Non-OS2**. Select this for all other operating systems and configurations.

**Report No FDD For WIN95:** This option allows BIOS to indicate whether WIN95 is with FDD or not. The Default value is NO.

*NO: Report No FDD for WIN95*

*YES: Report FDD for WIN95*

**Video BIOS Shadow:** This option allows video BIOS to be copied into RAM. Video Shadow will increase the video performance of your system. The default is Enabled.

*Enabled: Video shadow is enabled*

*Disabled: Video shadow is disabled*

**C8000 CFFFF Shadow**

**CC000 CFFFF Shadow**

**D0000 D3FFF Shadow**

**D4000 D7FFF Shadow**

**D8000 DBFFF Shadow**

**DC000 DFFFF Shadow**

These categories determine whether ROMs from option cards will be copied into RAM. This will be in 16K byte or 32K byte units and the size will depend on chipset of the option card.

*Enabled: Optional shadow is enabled*

*Disabled: Optional shadow is disabled*

### **4-3 Chipset Features Setup**

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu.

ROM PCITSA BIOS(JASPIA8) CHIPSET FEATURES SET UP AWARD SOFTWARE INC			
Bank 0/1 DRAM Timing	Fast	Auto-Detect DIMM/PCI CLK	Enabled
Bank 2/3 DRAM Timing	Fast	Spread Spectrum	Disabled
Bank 4/5 DRAM Timing	Fast	System/CPU Warning Temp	50°C/122°F
		Current CPU Temp	32°C/89°F
SDRAM Cycle length	3	Current System Temp	0.6°C/32.2°F
SDRAM Bank interleave	2 Bank	Current CPU Fan Speed	0 RPM
DRAM Page-Mode	Enabled	Vcore 2.83V	±48mV
DRAM Read Latency Delay	2.0 nSec	3.3V 3.32V	+5V 4.94V
Memory Hole At > 1 MB Addr	Disabled	+1.2V ±2.6V	±1.7V ±98mV
Read Around write	Disabled	5V 5.09V	
Concurrent PCI/Host	Enabled		
Video RAM Cacheable	Enabled		
AGP Aperture Size	64M		
Esc Quit          SelectItem F1 Help PU/PD/+/- Modify F5 Old Values Shift+F2 Color F7 Load Setup Defaults			

Figure 4 Chipset Features Setup

**SDRAM Cycle length** This setting defines the CAS timing parameter of the SDRAM in terms of clocks.

The default is 3.

- 2 Provides faster memory performance*
- 3 Provides better memory compatibility*

**Video RAM Cacheable** This option allows the CPU to cache read/writes of the video RAM.

The default is Enabled.

- Enabled This option allows for faster video access*
- Disabled Reduced video performance*

**Memory Hole at 15M-16M** You can reserve this memory area for the use of ISA adaptor ROMs  
The default is Disabled

**Enabled** This field enables the main memory (1.5-16MB) to remap to ISA BUS

**Disabled** Normal Setting

**NOTE** If this feature is enabled you will not be able to cache this memory segment

**AGP Aperture Size** The amount of system memory that the AGP card is allowed to share  
The default is 64

**4** 4MB of systems memory accessible by the AGP card

**8** 8MB of systems memory accessible by the AGP card

**16** 16MB of systems memory accessible by the AGP card

**32** 32MB of systems memory accessible by the AGP card

**64** 64MB of systems memory accessible by the AGP card

**128** 128MB of systems memory accessible by the AGP card

**256** 256MB of systems memory accessible by the AGP card

**Auto Detect DIMM/PCI Click** Allows you to stop DIMM/PCI Clock drive when the DIMM slot or PCI Slot are not plug. This item may help reduce EMI  
The default is Enabled

**Enabled** Provides unused DIMM/PCI to stop.

**Disabled** Provides the clock generator always driving

**Spread Spectrum Modulated** Allows you to active the Spread Spectrum Modulation function for reduce EMI (Note: When Enabled the item that performance will be impacted)

The default is Disabled

**Enabled** Provides the Spread Spectrum function from clock generator

**Disabled** NO Spread Spectrum function

**CPU Warning Temperature** This is the temperature that the computer will respond to an overheating CPU

The default is Disabled

**Enabled** Temperature is monitored on the CPU

**Disabled** This feature is turned off

**Current CPU Temperature** This is the current temperature of the CPU

**Current Power FAN Speed** The current power fan speed in RPMs

**Current CPU FAN Speed** The current CPU fan speed in RPMs

**Current Chassis FAN Speed** The current chassis fan speed in RPMs

**CPU(V)** The voltage level of the CPU

**+1.5V** The voltage level of the CPU's GTL+ Bus

**+3.3V +5V, +12V** The voltage level of the switch power supply

#### **4-4 Power Management Setup**

Choose the "POWER MANAGEMENT SETUP" in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ assignments. In general, these parameters should not be changed unless it's absolutely necessary.

ROM PCISA BIOS 2A59.PAB  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC

PowerManagement	UserDefine	Primary(INTR)	ON
PM Control by APM	Yes	IRQ3 (COM1)	Primary
Video off Options	Suspend > Off	IRQ4 (COM2)	Primary
Video off Method	VRM SYNC+Blank	IRQ5 (LPT 1)	Primary
MODEM Use IRQ	9	IRQ6 (FloppyDisk)	Disabled
Soft. off by PWRBTN	Delay 4 Sec	IRQ7 (LPT)	Primary
**RMTimers**		IRQ8 (RTCAlarm,	Disabled
HDD Power Down	Disable	IRQ9 (IRQ2 Radar)	Primary
Doze Mode	Hour	IRQ10 (Reserved)	Primary
Suspend Mode	Hour	IRQ11 (Reserved)	Primary
** RMR Events **		IRQ12 (PS/2 Mouse)	Primary
VGA	OFF	IRQ13 (Coprocessor)	Primary
LPT&COM	LPT/COM	IRQ14 (Hard Disk)	Primary
HDD & FDD	ON	IRQ15 (Reserved)	Disabled
DMA/master	OFF		
ModemRing Resumes	Disabled		
RTK AlarmingResume	Disabled		
		Esc Quit	← → ↑ ↓ SelectItem
		F1 Help	P1/PD/4 Modify
		F2 Old Values	Shift+F2 Color
		F7 Load Setup Defaults	

Figure 5 Power Management Setup

You can only change the content of Doze Mode, Standby Mode and Suspend Mode when the Power Management is set to User Define.

**Power Management** Use this to select your Power Management selection  
The default is User define

**Disabled** The system operates in NORMAL conditions (Non-GREEN) and the Power Management function is disabled.

**Max saving** Maximum power savings. Inactivity period is 1 minute in each mode

**Min saving** Minimum power savings. Inactivity period is 1 hour in each mode

**User define** Allows user to define PM Timers parameters to control power saving mode

**PM controlled APM** This option shows whether or not you want the Power Management to be controlled by Advanced Power Management (APM)  
The default is Yes

**Yes** APM controls our PM

**No** APM does not control our PM

**Video Off Method** This option allows you to select how the video will be disabled by the power management  
The default is V/H Sync + Blank

**V/H Sync + Blank** System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer

**DPM** Select this option if your monitor supports the Display Power Management Signaling (DPM), standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values

**Blank Screen** System only writes blanks to the video buffer

**Video Off option** Tells you what time frame that the video will be disabled under current power management settings  
The default is Standby

**Standby** Video powers off after time shown in standby mode setting

**Daze** Video powers off after time shown in daze mode setting

**Suspend** Video powers off after time shown in suspend mode setting

**No A** Video power off not controlled by power management

**MODEM Use IRQ** Name the interrupt request (IRQ) line assigned to the modem if any on your system. Activity of the selected IRQ awakens the system

Default is IRQ 3

<i>None</i> No IRQ is used	3 IRQ 3
4 IRQ 4	5 IRQ 5
7 IRQ 7	9 IRQ 9
10 IRQ 10	11 IRQ 11

The EP 61APC M supports HDD Power Down Doze and Standby power saving functions when using the Intel Pentium II Processor  
The default is Disabled

**Doze Mode** The "Doze" mode timer starts to count when no "PM events" have occurred

**Suspend Mode** This function works only when the Pentium II Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" are occurring. Value range is from 1 minute up to 1 hour

**HDD Power Down** HDD Standby timer can be set from 1 to 15 minutes)

**VGA Active Monitor** Use this option if your monitor has advanced power saving features

The default is Enabled

**Enabled** Your monitor's power features will be included in power management.

**Disabled** Your monitor's power features will not be included in power management.

**Soft-Off by PWR-BTTN** Use this to select your soft off function

The default is Delay 4 sec

*Instant Off* Turns off instantly

*Delay 4 Second* Turns off after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press again to take system out of Suspend Mode

**Resume by Alarm** This option allows you to have the system turn on at a preset time each day or on a certain day. This option is only available when Power Loss Recovery is Enabled

The default is Enabled

**Enabled** The system will turn on at the preset time

**Disabled** The system will not turn on until you turn it on.

**Date (of month) Alarm:** This is how you set the date that the system will turn on. The default is 0.

0: Setting this to 0 will turn the system on everyday at the preset time.

1-31 Represents the day of the month that you need the system to turn on.

**Time (hh:mm:ss) Alarm:** This sets the time that you need the system to turn on. The default is 08:00:00.

## PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots.

**WARNING: Conflicting IRQ's may cause the system to not find certain devices.**

RDM PC/ISA BIOS(2A6L FPA9)

PNP/PCI CONFIGURATION

AWARD SOFTWARE, INC

PNP OS Installed	No	CPU to PCI Write Buffer	Enabled
Resources Controlled By	Manual	PCI Dynamic Bursting	Enabled
Reset Configuration Data	Dashed	PCI Master/WS Write	Enabled
ACP/IO Device Node	Enabled	PCI Delay Transaction	Enabled
IRQ 3 assigned to	Legacy ISA	PCI Master Read Prefetch	Enabled
IRQ 4 assigned to	Legacy ISA	PCI#2 Access #1 Retry	Disabled
IRQ 5 assigned to	PCI/ISA PnP	AGP Master 1 WS Write	Enabled
IRQ 7 assigned to	Legacy ISA	AGP Master 1 WS Read	Disabled
IRQ 9 assigned to	PCI/ISA PnP		
IRQ 10 assigned to	PCI/ISA PnP	PCI IRQ Activated By	Leave
IRQ 11 assigned to	PCI/ISA PnP	Assign IRQ For USB	Enabled
IRQ 12 assigned to	PCI/ISA PnP	Assign IRQ For VGA	Enabled
IRQ 14 assigned to	Legacy ISA		
IRQ 15 assigned to	Legacy ISA		
DMA 0 assigned to	PCI/ISA PnP		
DMA 1 assigned to	PCI/ISA PnP		
DMA 3 assigned to	PCI/ISA PnP	Esc Quit	* + + - Select Item
DMA 5 assigned to	PCI/ISA PnP	F1 Help	P1/PD/+/- Modify
DMA 6 assigned to	PCI/ISA PnP	F3 Old Values	Shift/F2 Color
DMA 7 assigned to	PCI/ISA PnP	F7 Load Setup Defaults	

Figure 6 PC Configuration Setup

**PNP OS Installed:** Do you have a PNP OS installed on your system? The default is No.

*Yes: Select if you are using a PNP OS.*

*No: Select if your OS does not support PNP.*

**Resources Controlled By** Who controlled the system PNP/PCI resources  
The default is Manual.

**Manual** PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA Cards

**Auto** If your ISA card and PCI card are as PNP cards BIOS will assign the interrupt resource automatically.

**Reset Configuration Data** This setting allows you to clear ESCD data  
The default is Disabled

**Disabled Normal Setting**

**Enabled** If you have plugged in some Legacy cards to the system and they were recorded into ESCD (Extended System Configuration Data), you can set this field to Enabled in order to clear ESCD.

**PCI IDE IRQ Map** This item allows the user to configure the system for the type of IDE hard disk controller in use. By default, the BIOS assumes that the hard drive controller is an ISA device rather than a PCI controller. If you are using a PCI controller then you will need to change this to specify which PCI slot has the controller and which PCI interrupt A, B, C, or D is associated with the connected IDE devices.

**Assign IRQ For USB** This item allows BIOS to assign whether IRQ is with USB or not. If you have not connect the USB device Can release the IRQ for other device

The default is Enabled

**Enabled**, Provides IRQ for USB device

**Disabled** Release IRQ for other device

## **4-8 Load Setup Defaults**

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

## 4-7 Integrated Peripherals

ROM PCI/ISA BIOS (A6) FPA91			
INTEGRATED PERIPHERALS			
AWARD SOFTWARE, INC			
OnChip IDE First Channel	Enabled	Onboard Parallel Port	3725IRQ7
OnChip IDE Second Channel	Enabled	Onboard Parallel Mode	ECP EPP
IDE Prefetch Mode	Enabled	ECP Mode Use DMA	?
IDE HDD Block Mode	Enabled	Parallel Port EPType	EPP 9
IDE PrimaryMaster PIO	Auto	OnChip JSB	Disabled
IDE Primary Slave PIO	Auto		
IDE Secondary Master PIO	Auto		
IDE Secondary Slave PIO	Auto		
IDE PrimaryMaster JDMA	Auto		
IDE Primary Slave JDMA	Auto		
IDE Secondary Master UDMA	Auto		
IDE Secondary Slave UDMA	Auto		
Init AGP Display First	Disabled		
Onboard FDD Controller	Enabled	Ex: Quit          Select item	
Onboard Serial Port 1	Auto	F1 Help      PU/PD/+/- Modify	
Onboard Serial Port 2	Auto	F5 Old Values      (Shift)F2 Color	
UART2 Mode	Standard	F7 Load Setup Defaults	

Figure 8 Integrated Peripherals

**Note** If you do not use the Onboard IDE connector, then you will need to set Onboard Primary PCI IDE Disabled and Onboard Secondary PCI IDE Disabled.

**Note** The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm.).

**IDE HDD Block Mode** IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time. The default is Enabled.

**Enabled**: Enabled IDE HDD Block Mode Provides higher HDD transfer rates.

**Disabled**: Disable IDE HDD Block Mode

**Onchip IDE First Channel** The default value is Enabled.

**Enabled**: Enables Onboard IDE primary port.

**Disabled**: Disables Onboard IDE primary port.

**Onchip IDE Second Channel**

The default is Enabled

**Enabled**: Enables Onboard IDE secondary port.

**Disabled**: Disables Onboard IDE secondary port

**IDE Primary Master PIO**

The default is Auto

**Auto**: BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode

**Mode 0~4**: Manually set the IDE Programmed interrupt mode

**IDE Primary Slave PIO**

The default is Auto

**Auto**: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode

**Mode 0~4**: Manually set the IDE Programmed interrupt mode

**IDE Secondary Master PIO**

The default is Auto

**Auto**: BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode

**Mode 0~4**: Manually set the IDE Programmed interrupt mode

**IDE Secondary Slave PIO**

The default is Auto

**Auto**: BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode

**Mode 0~4**: Manually set the IDE Programmed interrupt mode

**IDE Primary Master UDMA** This allows you to select the mode of operation for the hard drive

The default is Auto

**Auto**: The computer will select the optimal setting

**Disabled**: The hard drive will run in normal mode

**IDE Primary Slave UDMA** This allows you to select the mode of operation for the hard drive

The default is Auto

**Auto** The computer will select the opt.mus setting  
**Disabled** The hard drive will run in normal mode

**IDE Secondary Master UDMA** This allows you to select the mode of operation for the hard drive  
The default is Auto

**Auto** The computer will select the opt.mus setting  
**Disabled** The hard drive will run in normal mode

**IDE Secondary Slave UDMA** This allows you to select the mode of operation for the hard drive  
The default is Auto

**Auto** The computer will select the opt.mus setting  
**Disabled** The hard drive will run in normal mode

**USB Keyboard Support** This controls the activation status of an optional USB keyboard that may be attached  
The default is disabled.

**Enabled** Enable USB keyboard support  
**Disabled** Disable USB keyboard support

**Onboard FDC Controller** This controls the state of the onboard floppy controller  
The default value is Enabled

**Enabled** Enable the Onboard Winbond Chip's floppy drive interface controller  
**Disabled** Disable the Onboard Winbond Chip's floppy drive interface controller

**Onboard Serial Port 1** This field allows the user to configure the 1st serial port  
The default is Auto

**AUTO** Enable Onboard Serial port 1 and address is Auto adjusted  
**COM1** Enable Onboard Serial port 1 and address is 3F8H/IRQ4  
**COM2** Enable Onboard Serial port 1 and address is 2F8H/IRQ3  
**COM3** Enable Onboard Serial port 1 and address is 3E8H/IRQ4  
**COM4** Enable Onboard Serial port 1 and address is 2E8H/IRQ3

**Disabled**: Disable Onboard SMC CHIP's Serial port.

**Onboard Serial Port 2**: This field allows the user to configure the 2nd serial port. The default is Auto.

**AUTO**: Enable Onboard Serial port 2 and address is Auto adjusted.

**COM1**: Enable Onboard Serial port 2 and address is 3F8H IRQ4.

**COM2**: Enable Onboard Serial port 2 and address is 2F8H IRQ3.

**COM3**: Enable Onboard Serial port 2 and address is 3E8H IRQ4.

**COM4**: Enable Onboard Serial port 2 and address is 2E8H IRQ3.

**Disabled**: Disable Onboard SMC CHIP's Serial port.

**UART Mode Select**: The mode of the IR Controller. The default is Normal.

**IrDA**: Support a Serial Infrared Interface IrDA.

**ASKIR**: Support a Sharp Serial Infrared Interface formats.

**Normal**: The IRRX and IRTX pins of IR function in normal condition.

**Onboard Parallel port**: This field allows the user to configure the LPT port. The default is 378H IRQ7.

**378H**: Enable Onboard LPT port and address is 378H and IRQ7.

**278H**: Enable Onboard LPT port and address is 278H and IRQ5.

**3BCH**: Enable Onboard LPT port and address is 3BCH and IRQ7.

**Disabled**: Disable Onboard Winbond Chip's LPT port.

**Parallel Port Mode**: This field allows the user to select the parallel port mode. The default is ECP+EPP.

**Normal**: Standard mode IBM PC/AT Compatible bidirectional parallel port.

**EPP**: Enhanced Parallel Port mode.

**ECP**: Extended Capabilities Port mode.

**EPP+ECP**: ECP Mode & EPP Mode.

**ECP Mode USE DMA**: This field allows the user to select DMA1 or DMA3 for the ECP mode.

The default is DMA3.

**DMA1**: This field selects the routing of DMA1 for the ECP mode.

**DMA3** This field selects the routing of DMA3 for the ECP mode

**Power On Method** There are "Button Only" "Hot Key" and "Any key" can be chosen by this field that allows users to select one of these various functions as Power On Method for the requirement.

The default value in this selection is "Hot Key" Ctrl+F1

**Hot Key:** User can press "Control Key" (Ctrl), and "Function Key" (from F1 to F12), individually to power on the system

The interval between "Ctrl" key and function Key (F1-F12), must be short

**Anykey:** Press anykey to power on the system

**Button Only** This power on method is controlled by J. (pw-on), Use Power On Button to power on the system.

**Password:** User can Power On the System by password the password can be entered from 1 to 5 characters. The maximum of password is 5 characters

If user forgets lost the password please go into BIOS setting to change the Power On Method, or keyin another words as password instead of original one

#### **4-8 Change Supervisor or User Password**

To change the password, choose the "SUPERVISOR PASSWORD" or "USER PASSWORD" option from the CMOS SETUP UTILITY menu and press [Enter].

**NOTE** Either "Setup" or "System" must be selected in the "Security Option" of the BIOS FEATURES SETUP menu.

- 1 If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message

Enter Password

Press the Enter key to continue after the proper password is given

- 2 If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password, the SETUP UTILITY will display a message and ask for a confirmation

Confirm Password

3 After pressing the [Enter] key (ROM password if the option was not used) or current password user defined password the user can change the password and store new one in CMOS RAM A maximum of 8 characters can be entered.

#### **4-9 IDE HDD Auto Detection**

The "IDE HDD auto detection" utility is very useful, too especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don't need the "IDE HDD AUTO DETECTION" utility. The BIOS will auto detect the hard disk size and mode on display during POST.

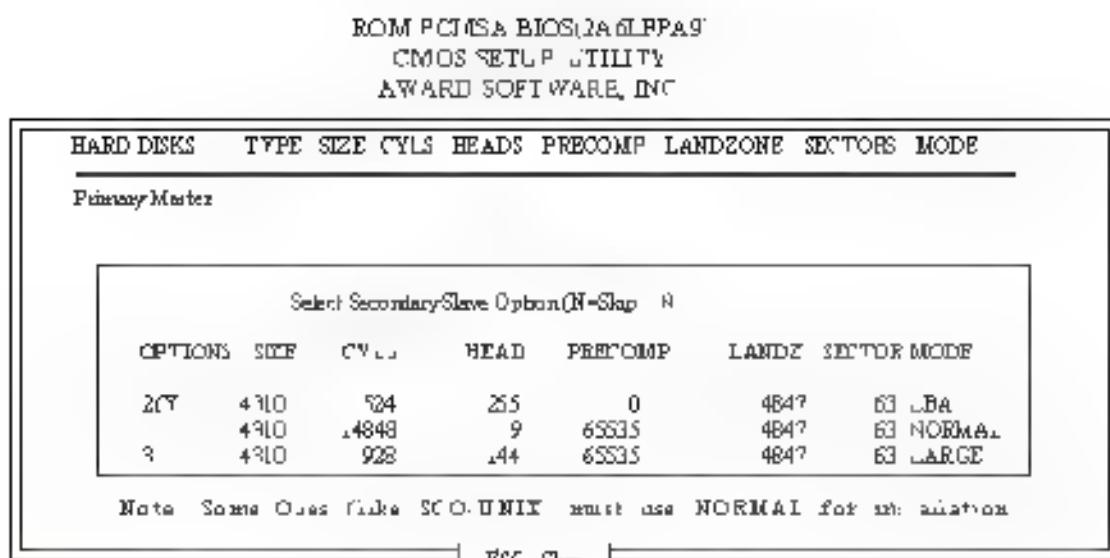


Figure 8 IDE HDD Auto Detection

#### **NOTE HDD Modes**

The Award BIOS supports 3 HDD modes NORMAL, LBA & LARGE. NORMAL mode

Generates access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, heads & sectors for NORMAL mode are

1024. 6 & 63  
no Cylinder .024  
x no Head (16)  
x no Sector 63  
x no\_per\_sector 512.  
528 Megabytes

If user sets his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

**LBA (Logical Block Addressing) mode** A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 GigaBytes which is obtained by the following formula:

no Cylinder .024  
x no Head 255  
x no Sector 63  
x bytes\_per\_sector 512.  
8.4 GigaBytes

**LARGE mode** Extended HDD access mode supported by Award Software

Some IDE HDDs contain more than 1024 cylinder without LBA support. In some cases, user do not want LBA. The Award BIOS provides another alternative to support these kinds of LARGE mode.

<u>CYLS</u>	<u>HEADS</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads multiplied by 2. A reverse transformation process will be made inside.

INT 12h in order to access the right HDD address

**Maximum HDD size**

no Cylinder	(1024)
x no Head	(32)
x no Sector	(63)
<u>x bytes per sector</u>	<u>512</u>
	1 GigaByte

*Note To support LBA or LARGE mode of HDDs there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.*

UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB

**4-10 HDD Low Level Format**

**Interleave** Select the interleave number of the hard disk drive you wish to perform a low level format on. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for automatic detection.

**Auto scan bad track** This allows the ability to scan first then format by each track

**Start** Press <Y> to start low level format

---

**Appendix A:****A-1 MEMORY MAP**

Address Range	Size	Description
00000-7FFFF]	512K	Conventional memory
80000-9FBFF]	27K	Extended Conventional memory
9FC00-9FFFF]	K	Extended BIOS data area if PS/2 mouse is installed
A0000-CFFFF]	60K	Available for HDOS memory
C8000-DFFFF]	96K	Available for Hi DOS memory and adapter ROMs
E0000-EFFFF]	60K	Available forUMB
EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
F0000-F7FFF]	32K	BIOS CMOS setup utility
F8000-FCFFF]	20K	BIOS runtime service routine (2)
FD000-FDFFF]	4K	Plug and Play ESD data area
FE000-FFFFF]	8K	BIOS runtime service routine 1

**A-2 I/O MAP**

000-0 F]	DMA controller (Master)
020-021]	INTERR IPTCONTROLLER (Master)
022-023]	CHIPSET control registers I/O ports
040-05F]	TIMER control registers
060-06F]	KEYBOARD interface controller (8042)
070-07F]	RTC ports & CMOS I/O ports
080-09F]	DMA register
0A0-0BF]	INTERRUPT controller (Slave)
0C0-0DF]	DMA controller Slave
0F0-0FF]	MATHCOProcessor
F0-1F8]	HARD DISK controller
278-27F]	PARALLEL port 2
2B0-2DF]	GRAPHIC adapter controller
2F8-2FF]	SERIAL port 2
360-36F]	NETWORK ports
378-37F]	PARALLEL port
3B0-3BF]	MONOCHROME & PARALLEL port adapter
3C0-3CF]	CGA adapter

---

3D0-3DF]	CQA adapter
4F0-4F7]	FLOPPYDISK 5K controller
3F8-3FF]	SERIAL port

**A-3 TIMER & DMA CHANNEL MAP**

## TIMER MAP:

TIMER Channel 0 System timer interrupt  
TIMER Channel 1 DRAM REFRESH request  
TIMER Channel 2 SPEAKER tone generator

## DMA CHANNELS

DMA Channel 0 Available  
DMA Channel 1 Onboard ECP Option,  
DMA Channel 2 FLOPPYDISK (SMC CHIP)  
DMA Channel 3 Onboard ECP default)  
DMA Channel 4 Cascade for DMA controller  
DMA Channel 5 Available  
DMA Channel 6 Available  
DMA Channel 7 Available

**A-4 INTERRUPT MAP**

## NMI

Parity check error

## RQ(H/W)

0 System TIMER interrupt from TIMER 0  
1 KEYBOARD output buffer full  
2 Cascade for RQ 8-15  
3 SERIAL port 1  
4 SERIAL port 2  
5 PARALLEL port 2  
6 FLOPPYDISK (SMC CHIP)  
7 PARALLEL port  
8 RTC clock  
9 Available  
10 Available  
11 Available  
12 PS/2 Mouse  
13 MMAT H coprocessor

- 14 Onboard HARD DISK (IDE, channel)
- 15 Onboard HARD DISK (IDE, channel)

## A-5 RTC & CMOS RAM MAP

### RTC & CMOS

00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	FLOPPY DISK drive type byte
11	Reserve
12	HARD DISK type byte
13	Reserve
14	Equipment type
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
19-2d	
2E-3F	
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	DATE CENTURY byte
33	INFORMATION FLAG
34-3F	Reserve
40-7F	Reserved for CHIPSET SETTING DATA

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**Appendix B:****B-1 POST CODES**

ISA POST codes are typically output to I/O port address 80h

POST (hex)	DESCRIPTION
002	Reserved
00	Turn off OEM specific cache shadow
03	1. Initialize EISA registers EISA B OS only 2. Initialize all the standard devices with default values Standard devices includes DMA controller 8237) Programmable interrupt Controller 8259) Programmable interval Timer 8254, RTC chip
04	Reserved
05	1. Keyboard Controller Self Test
06	2. Enable Keyboard interface
07	Reserved
08	Verifies CMOS's basic R/W functionality
C1	Auto-detection of onboard DRAM & Cache
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
08	Test the first 256K DRAM
09	OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers initialize INT numbers Group 33, 20 with Dummy Spurious interrupt Handler 2. Issue CPU ID instruction to identify CPU type 3. Early Power Management initialization OEM specific Verify the RTC time is valid or not
0B	2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PnP initializations including (PnP B OS only) Assign CSN to PnP SA card Create resource map from ESCD 5. Assign IO & Memory for PCI devices (PCI BIOS only)

0C	Initialization of the BIOS Data Area. (40:ON - 40:FF)
0D	1. Program some of the Chipset's value according to Setup (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed. 3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
0E	1. Test video RAM. (If Monochrome display device found) 2. Show messages including <ul style="list-style-type: none"><li>- Award Logo, Copyright string, BIOS Data code &amp; Part No.</li><li>+ OEM specific sign on messages</li><li>+ Energy Star Logo. (Green BIOS ONLY)</li><li>- CPU brand, type &amp; speed.</li><li>- Test system BIOS checksum. (Non-Compress Version only)</li></ul>
0F	DMA channel 0 test.
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2
17	Reserved.
19	Test 8259 functionality.
1A-1D	Reserved.
1E	If EISA NVM checksum is good, execute EISA initialization. (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K. 2. Test Extended Memory from 1M to the top of memory.
32	1. Display the Award Plug & Play BIOS Extension message. (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port according to setup value
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	1. Initialize Keyboard. 2. Install PS2 mouse.

3E	Try to turn on Level 2 cache  <b>Note:</b> Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 6h
3F-40	Reserved
BF	1. Program the rest of the Chipset's value according to Setup (Later Setup Value Program)  2. If auto-configuration is enabled, program the chipset with pre-defined Values.
41	Initialize floppy disk drive controller.
43	Initialize Hard drive controller.
45	If it is a PnP BIOS, initialize serial & parallel ports.
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved.
4E	If there is any error detected (such as video, kb. ), show all error messages on the screen & wait for user to press <F1> key
4F	1. If password is needed, ask for password. 2. Clear the Energy Star Logo. (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS.
51	Reserved
52	1. Initialize all ISA ROMs. 2. Later PCI initializations (PCI BIOS only) - assign IRQ to PCI devices. - initialize all PCI ROMs. 3. PnP Initializations (PnP BIOS only) - assign I/O, Memory, IRQ & DMA to PnP ISA devices. - initialize all PnP ISA ROMs. 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization. - Enable/Disable global PM - APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports. 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value.
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting

- 61      1. Try to turn on Level 2 cache.  
Note: If L2 cache is already turned on in POST 3D, this part will be skipped.  
2. Set the boot up speed according to Setup setting.  
3. Last chance for Chipset initialization.  
4. Last chance for Power Management initialization (Green BIOS only).  
5. Show the system configuration table.
- 62      1. Setup daylight saving according to Setup value.  
2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting.
- 63      1. If there is any changes in the hardware configuration, update the ESCD information (PnP BIOS only).  
2. Clear memory that have been used.  
3. Boot system via INT 19H.
- FF      System Booting. This means that the BIOS already pass the control right to the operating system.

### B-2 Unexpected Errors:

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POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs 0

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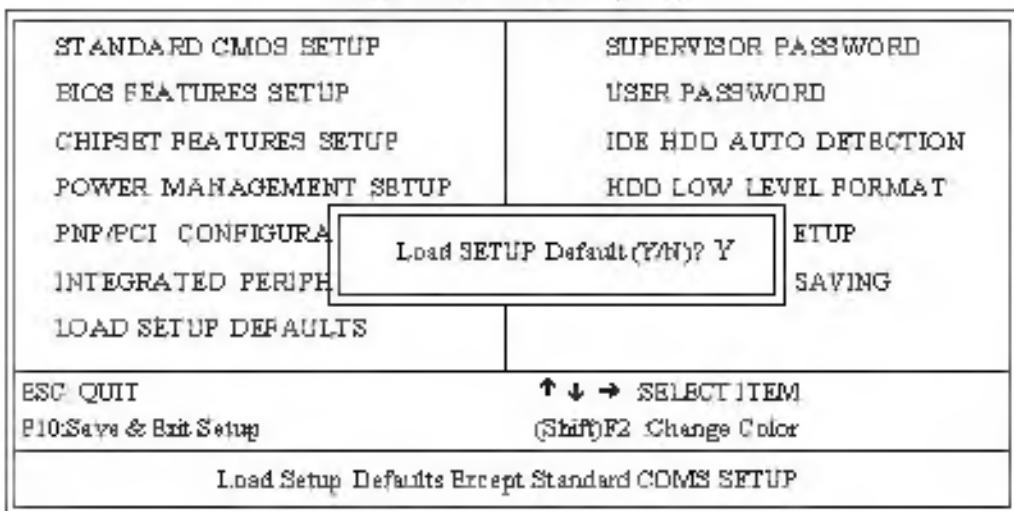
**Appendix C**

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**NOTE:**

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

ROM PCI/ISA BIOS(2A69KPA9)  
CMOSSETUP UTILITY  
AWARD SOFTWARE, INC.

**LOAD SETUPDEFAULTS**